WHAT IS CLAIMED IS:

1. An apparatus for measuring an optical imaging system, which comprises:

an arrangement for combined wavefront and distortion measurement, comprising

- an object structure with an interferometry object structure for wavefront generation from illuminating light and a Moiré object structure for Moiré pattern generation, which are to be arranged simultaneously or alternatively on the object side, and

- an image structure with an interferometry image structure matched to the interferometry object structure and a Moiré image structure matched to the Moiré object structure, which are to be arranged simultaneously or alternatively on the image side,

- a spatially resolving detector unit which is arranged downstream of the image structure and has a first detector plane for the spatially resolving acquisition of interferometry wavefront information, and a second detector plane for the spatially resolving acquisition of Moiré image information for distortion measurement, or has an axially movable detector surface for the spatially resolving acquisition of interferometry wavefront information in a first axial position and for the spatially resolving acquisition of Moiré image information for distortion measurement in a second axial position.

2. The apparatus as claimed in claim 1, wherein at least one of the object structure and the image structure contains a plurality structure regions selected from

the group consisting of line-grid, cross-grid, checkerboard-grid and pinhole structure regions, which are used as at least one of shearing interferometry and point-diffraction interferometry structures for at least one of wavefront/image-shell measurement and as Moiré structures for distortion measurement.

3. The apparatus as claimed in claim 1, wherein at least one of the object structure and the image structure contains at least one of at least two different interferometry and at least two different Moiré structure regions with different structure periodicity.

4. The apparatus as claimed in claim 2, wherein at least one illumination focusing optics and a diffusion plate region are assigned to at least one of a respective interferometry structure region and a respective Moiré structure region.

5. The apparatus as claimed in claim 3, wherein at least one illumination focusing optics and a diffusion plate region are assigned to at least one of a respective interferometry structure region and a respective Moiré structure region.

6. The apparatus as claimed in claim 1, wherein at least one of the image structure and a spatially resolving sensor element of the detector unit is arranged to move axially relative to one another.

7. The apparatus as claimed in claim 1, wherein the image structure, as a separate component, is fixed on the entry side of the detector unit or is held such that

it can move with respect to the detector unit or forms an integral part on the entry side of the detector unit.

8. The apparatus as claimed in claim 1, wherein the detector unit comprises:

- at least one of a fiber plate and a flexible image conductor; and
- a spatially resolving sensor element arranged downstream of the fiber plate or the flexible image conductor,

wherein

- the fiber plate or the flexible image conductor has a curved entry surface or at least two different entry surfaces, which are offset axially or inclined spatially with respect to one another, or an entry surface which is configured to move into at least two different axial positions.

9. A detector unit for imaging optical radiation, comprising:

- at least one of a fiber plate and a flexible image conductor; and
- a spatially resolving sensor element arranged downstream of the fiber plate or the flexible image conductor,

wherein

- the fiber plate or the flexible image conductor has a curved entry surface or at least two different entry surfaces, which are offset axially or inclined spatially with respect to one another, or an entry surface which is configured to move into at least two different axial positions.

10. The detector unit as claimed in claim 9, wherein the fiber plate or the flexible image conductor or a detection surface of the sensor element comprises a fluorescent material or with a diffusor structure.

11. The detector unit as claimed in claim 9, wherein at least one of the fiber plate and the flexible image conductor has a first, front entry surface and, in the remaining region, has at least one axially set-back, second entry surface or is hollowed out.

12. The detector unit as claimed in claim 9, wherein the fiber plate contains a plurality of parts which are located one above another and are configured to move laterally relative to one another.

13. The detector unit as claimed in claim 11, further comprising at least one of a micro-objective and a filling with a more refractive medium in cutouts on the entry side of the fiber plate.

14. The detector unit as claimed in claim 12, further comprising at least one of a micro-objective and a filling with a more refractive medium in cutouts on the entry side of the fiber plate.

15. The detector unit as claimed in claim 9, further comprising imaging optics between the exit side of the fiber plate or of the flexible image conductor and the spatially resolving sensor element.

16. A method for measuring an optical imaging system, comprising:

performing a combined wavefront and distortion measurement, in which

- an interferometry object structure for wavefront generation from illuminating light and a Moiré object structure for Moiré pattern generation are arranged simultaneously or alternatively on the object side,

- an interferometry image structure matched to the interferometry object structure and a Moiré image structure matched to the Moiré object structure are arranged simultaneously or alternatively on the image side, and

- using a first detector plane, interferometry wavefront information is acquired in a spatially resolving manner and, using a second detector plane, Moiré image information is acquired in a spatially resolving manner for distortion measurement, or the interferometry wavefront information and the Moiré image information for distortion measurement are acquired one after another in a spatially resolving manner with a detector surface which can be moved into two different axial positions.

17. The method as claimed in claim 16, further comprising performing at least one of a topographic calibration for at least one of the object structure and the image structure, wherein a wavefront is acquired in an undisplaced initial position of object structure and image structure and a wavefront is acquired in one or more positions of object structure or image structure which are displaced laterally with respect to the initial position, the difference between the measured values for the one or more displaced positions and the measured values for the undisplaced position is formed and, from this, the topography profile of the object structure or image structure is determined.

18. The method as claimed in claim 16, wherein a lateral relative movement between object structure and image structure for phase-shift steps during a wavefront acquisition procedure is acquired by means of interferometry by evaluating a superposition of an imaged Moiré object structure and a Moiré image structure.

19. The method as claimed in claim 18, wherein the lateral displacement values determined by Moiré evaluation are used as correction values during the determination of the phase from the wavefront acquisition measured values or as feedback values for an associated positioning system.

20. The method as claimed in claim 16, wherein at least one structure region of at least one of the object structure and of the image structure is used both as an interferometry structure region and as a Moiré structure region and an interferometry image of the structure region, on the one hand, and a Moiré image of the structure region, on the other hand, are acquired by means of a detector surface moved axially into two different positions.

21. The method as claimed in claim 16, wherein, in the object structure and in the image structure, respectively, at least one point diffraction interferometry structure region is provided and the relative axial position of object structure and image structure is acquired from the associated point diffraction interferometry image.